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IDENTIFIERS *Graphic Communication

ABSTRACT

Intended to reduce unnecessary paper work on the part of the shop instructor in a graphic communications course, this job assignment book offers a simplified method of keeping student records up-to-date. It first provides a record/form with areas for student name, tool check number, locker number, textbook number, and grades; broad course objectives; course objectives for grades 10, 11, and 12; and instructions for recording student progress on the shop progress records. The student progress records follow. These identify the operations/skills that the student in a graphic communications course is expected to learn and provide a space in which the instructor records student progress as (1) instructed, (2) practiced, or (3) proficient. The theory outline appears next. Twenty-six topics are covered, including orientation, history, major printing processes, introduction to lithography, careers, layout, copy preparation, reproduction photography, the process camera, line photography, contacting, halftime photography, special effects, process color, quality control devices, proofing methods, stripping, platemaking, offset duplicator, offset press, printing inks, printing papers, finishing and binding, job planning, and employer/employee relations. Space is provided for each topic to indicate lesson plan number and dates scheduled, presented, and tested. (YLB)

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# GRAPHIC COMMUNICATIONS

## DIVISION OF VOCATIONAL-TECHNICAL SCHOOLS

Prepared for

Connecticut State Department of Education
Division of Vocational and Adult Education
Bureau of Vocational Program Planning and Development
Hartford, Connecticut 06115

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1983

9/83

## PREFACE

The objective of this Assignment Book is to reduce unnecessary paper work on the part of the shop instructor.

This Assignment Book will assist the instructor to keep student records up to date.

This outline, general in nature, was planned with flexibility so that each instructor may adapt his course of study to meet the particular needs of each student and the specific needs of the printing Industry in each geographic area.

In shops doing production work it is necessary to devise flexible daily lesson plans well in advance. This Assignment Book will assist the instructor in planning and organizing considerably in advance, thereby increasing his instructional efficiency.

The instructional staff should make an effort to keep abreast of technological developments in the industry. Continous communication with craft committees is recommended.

Please note that the book is not designed simply for planning. It has areas for locker assignments and text assignments. Students' names are entered only once for the entire course.

Grade ..... Year _____ Instructor _____

| STUDENT | TOOL CHECK NO. | LOCKER NO. | TEXT BOOK NO. | SHOP GRADES MARKING PERIOD | | | | | | THEORY GRADES MARKING PERIOD | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1 | 2 | 3 | 4 | | F | 1 | 2 | 3 | 4 | | F |
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## THEORY OUTLINE

I. ORIENTATION
II. HISTORY OF GRAPHIC COMMUNICATIONS
III. MAJOR PRINTING PROCESSES
IV. INTRODUTION TO LITHOGRAPHY
V. CAREERS IN GRAPHIC COMMUNICATIONS
VI. THE LAYOUT
VII. COPY PREPARATION
VIII. REPRODUCTION PHOTOGRAPHY
IX. THE PROCESS CAMERA
X. LINE PHOTOGRAPHY
XI. CONTACTING
XII. HALFTONE PHOTOGRAPHY
XIII. SPECIAL EFFECTS
XIV. PROCESS COLOR
XV. QUALITY CONTROL DIVICES
XVI. PROOFING METHODS
XVII. STRIPPING
XVIII. PLATEMAKING
XIX. THE OFFSET DUPLICATOR
XX. THE OFFSET PRESS
XXI. PRINTING INKS
XXII. PRINTING PAPERS
XXIII. FINISHING AND BINDING
XXIV. JOB PLANNING
XXV. EMPLOYEE/EMPLOYER RELATIONS
XXVI. LEGAL CONSIDERATIONS

## THEORY OUTLINE

| LESSON PLAN NO. | DATE SCHEDULED | DATE PRESENTED | DATED TESTED |
|---|---|---|---|
| | | | |

I. ORIENTATION

- A. Definition of Graphic Communications
- B. Brief Outline of Industry
  - 1. Scope
  - 2. Cultural Contribution
  - 3. Magnitude
- C. Shop Administration
  - 1. Rules and Regulations
  - 2. Assignments
  - 3. Materials Required
- D. Shop Safety (General)
  - 1. Fire Drills
  - 2. First Aid
  - 3. Fire Extinguishers
  - 4. Clothing and Personal Appearance
  - 5. Conduct in Shop
  - 6. Consideration of other's safety
- E. Safety Around Equipment
  - 1. Mechanical
  - 2. Electrical
  - 3. Hazardous Materials and/or Conditions
    - a. Flammables
    - b. Electrical
    - c. Lubricants
    - d. Chemicals
    - e. Other Hazards
  - 4. Procedure in case of Accidents
- F. Grading Procedure
  - 1. Theory
  - 2. Shop
- G. Shop Organization
  - 1. Departments
  - 2. Work Flow

| LESSON PLAN NO. | DATE SCHEDULED | DATE PRESENTED | DATED TESTED |
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II. HISTORY OF GRAPHIC COMMUNICATIONS

- A. Early Means of Communications
- B. Development of Printing until Movable Type

III. MAJOR PRINTING PROCESSES

- A. Relief Printing
- B. Intaglio Printing
- C. Screen Process
- D. Planographic Process
- E. Other Printing Processes

IV. INTRODUTION TO LITHOGRAPHY

- A. Invention of Lithography
- B. First Lithographic Presses
    1. Stone Lithography Today
- C. Discovery of the Offset Process
- D. Introduction of Photography to Printing

V. CAREERS IN GRAPHIC COMMUNICATIONS

- A. Divisions of Work
    1. Management
    2. Sales
    3. Layout, Design, and Art
    4. Composition
    5. Copy Preparation
    6. Camera Work
    7. Stripping
    8. Platemaking
    9. Presswork
    10. Bindery
    11. Electronic Technician
    12. Maintenance
    13. Estimating
    14. Shipping
    15. Service
    16. Research
    17. Quality Control
    18. Others

| LESSON PLAN NO. | DATE SCHEDULED | DATE PRESENTED | DATED TESTED |
|---|---|---|---|
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VI. THE LAYOUT

A. Types of Layouts
   1. Thumbnail
   2. Rough
   3. Comprehensive

B. Reading Specifications
   1. Reference Marks
   2. Sizes
   3. Printer's Point System

C. Type Styles
   1. Introduction to Type Styles
   2. Development
   3. Characteristics
   4. Classifications
   5. Selecting Proper Typefaces

VII. COPY PREPARATION

A. Careers
   1. Paste-up artist/mechanical artist
   2. Mark-up person
   3. Keyboard operator
   4. Proofreader
   5. Phototypesetter operator

B. Skills requirements
   1. Measurements
   2. Accuracy
   3. Neatness
   4. Drafting practices
   5. Follow directions
   6. Read and use dictionary

C. Working conditions
   1. Quiet
   2. Well lighted
   3. Clean
   4. Limited contact with chemicals

D. Composition Methods
   1. Hot type -- metal
      a. Hand-set foundry type
      b. Machine Composition

| LESSON PLAN NO. | DATE SCHEDULED | DATE PRESENTED | DATED TESTED |
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VII. COPY PREPARATION (Continued)

2. Cold type
    a. Strike-on
        1. Standard typewriter
        2. Proportional spacing typewriter
    b. Dry-transfer lettering
    c. Photographic composition
        1. Display phototypesetter
        2. Text phototypesetter
        3. Computer-assisted phototypesetter
3. Cold Type Composition
    a. Hand lettering (drawn by hand)
    b. Special lettering
    c. Maps
    d. Covers
    e. Design
    f. Graphs
    g. Lettering pens
    h. Stencils
    i. Templates
4. Clip art
    a. Commercially prepared (cut out/paste up)
    b. Line and halftone illustrations
    c. Slogans, symbols, borders, decorations, word, etc.
    d. Texture patterns, Ben Day, etc.
5. Adhesive type (pre-printed)
    a. Letters on clear acetate (adhesive back)
    b. Guide lines
    c. Cut out/attach
6. Dry transfer type (pre-printed)
    a. Plastic transparent sheets
    b. Transferable ink
    c. Letters, borders, illustrations, etc.
    d. Guide lines
7. Tapes for paste-ups
    a. Border (decorative)
    b. Rule
    c. Register marks
    d. Symbols
    e. Logos

| LESSON PLAN NO. | DATE SCHEDULED | DATE PRESENTED | DATED TESTED |
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VII. COPY PREPARATION (Continued)

8. Strike-On (impact composition)
    a. Typewriters (standard)
    b. Justifying typesetters
        1. IBM composer
        2. Varityper
9. Photographic composition
    a. Film or paper
    b. Positives or negatives
    c. Hand or machine
    d. Contact printing
    e. Projection printing
    f. Photolettering
    g. Phototypesetting
    h. Kinds of equipment
    i. Processing film or paper (stabilization/coated)
10. Typesetting input methods
    a. Direct input
    b. Tape perforating keyboarding
    c. Magnetic tape keyboarding
    d. Optical Character Recognition (OCR)
    e. Direct computerized input
    f. Video Display Terminal (VDT)
    g. Remote transmission system
11. Composition formats
    a. Flush left (ragged right)
    b. Flush right (ragged left)
    c. Centered
    d. Justified
    e. Run around
    f. Indentations
    g. Tabular matter
12. Proofing
    a. Reading methods
    b. Proofreader's marks
    c. Galley proofs
    d. Page proofs

| LESSON PLAN NO. | DATE SCHEDULED | DATE PRESENTED | DATED TESTED |
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E. Paste-up

1. Care and handling of layout elements and instruments
2. Reading layout specifications
    a. Notations
    b. Keys
3. Types of copy
    a. Composition
    b. Line art work
    c. Captions -- cut lines
    d. Headlines
    e. Windows
    f. Photomechanical
4. Necessary materials
    a. Wax or rubber cement, glue stick
    b. t-square
    c. Triangle
    d. Line gauge
    e. Centering rule
    f. Knife or razor blades
    g. Tape
    h. Mechanical masking film (red or amber)
    i. Transparent overlay sheets
    j. Blue pencil
    k. Pens
    l. Ink
    m. Compass
5. Procedure for paste-up
    a. Layout blue lines
    b. Apply adhesive
    c. Align and secure copy
    d. Check for straightness and cleanliness of copy
    e. Making corrections
        1. Pasting over
        2. Cutting in
6. Kinds of paste-ups
    a. Single color
    b. Multicolor
    c. Signatures
    d. Line/halftone combinations
    e. Reverses

| LESSON PLAN NO. | DATE SCHEDULED | DATE PRESENTED | DATED TESTED |
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E. Paste-up (Continued)

f. Outline halftones

7. Paste-up terms

a. Center marks

b. Trim marks

c. Page size

d. Register marks

e. Overlays

f. Gripper and guide symbols

g. Gutter margin

h. Foot

i. Imposition

F. Copy Mark-up and Proofreading

1. Mark-up specifications

a. Type size and leading

b. Type face

c. Line length

d. Format

e. Caps, lower case (c/lc)

f. Family branch

g. Correction symbols

2. Proofing

## VIII. ORIENTATION TO REPRODUCTION PHOTOGRAPHY

A. Types of reproductions

1. Line drawings
2. Halftones
3. Duotones
4. Special effects
5. Process color
6. Posterizations

B. The process darkroom

1. Wet and dry areas
2. The process camera
3. The contact area
4. The developing sink, temperature control
5. Film storage area
6. Chemical storage area
7. Film and/or diffusion transfer area
8. Arrangement of tray processing chemicals

| LESSON PLAN NO. | DATE SCHEDULED | DATE PRESENTED | DATED TESTED |
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VIII. ORIENTATION TO REPRODUCTION PHOTOGRAPHY (Continued)

9. Safelights, white lights and switches
10. Viewing table with safelight and white light
11. Film/paper cutter
12. Timers
13. Film drying cabinet or machine
14. Light trap

C. Light sensitive materials
   1. Film
      a. Orthochromatic
      b. Panchromatic
      c. Blue sensitive
      d. High contrast
      e. Continuous tone
      f. Negative working
      g. Reversal -- duplicating
   2. Film characteristics
      a. Bases
      b. Emulsions
      c. Gelatins
      d. Antihalation
      e. Curl
   3. Paper
      a. High contrast
      b. Continuous Tone
      c. Orthochromatic
      d. Blue sensitive
      e. Panchromatic

D. The contacting area
   1. Types of contact frames
      a. Mechanical -- top loading with self-contained light
      b. Glass over compressible surface (sponge rubber)
      c. Vacuum frame
   2. Parts of contact frames and controls
      a. Glass
      b. Blanket
      c. Draw-down sheet
      d. Looking devices
      e. Vacuum switch and vacuum gauge

| LESSON PLAN NO. | DATE SCHEDULED | DATE PRESENTED | DATED TESTED |
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VIII. ORIENTATION TO REPRODUCTION PHOTOGRAPHY (Continued)

- f. Point light source
- g. Timer

3. Care and use

E. Darkroom chemistry

1. Safety in preparing & handling chemicals
2. Developers
   - a. Types
     1. Crystals
     2. Concentrated liquid
     3. Ready-to-use
   - b. Mixing formulas
   - c. Films reaction to developer
3. Fixers
   - a. Types
     1. Crystals
     2. Concentrated liquid
     3. Read-to-use
   - b. Mixing formulas
   - c. Film's reaction to fixers

IX. THE PROCESS CAMERA

1. Types of cameras
   - a. Horizontal
   - b. Vertical
2. Parts and adjustments
   - a. Lensboard
   - b. Copyboard
   - c. Lens and lens cap
   - d. Lights
     1. Arc
     2. Tungsten
     3. Metal halide
     4. Pulsed xenon
   - e. aperture ring and percentage scale
   - f. Lensboard and copyboard percentage tapes (scales)
   - g. Camera bed
   - h. Bellows

| LESSON PLAN NO. | DATE SCHEDULED | DATE PRESENTED | DATED TESTED |
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VIII. ORIENTATION TO REPRODUCTION PHOTOGRAPHY (Continued)

i. Ground glass
j. Film holder -- vacuum or pressure
k. Control panel
1. On/off
2. Focus
3. Timer
4. Vacuum switch
5. Percentage tapes controls
6. Start and stop switch
1. Halftone flashing lamp and timer

X. LINE PHOTOGRAPHY

A. Types of copy
B. Preparing the darkroom
C. Adjusting the camera
D. Handling and positioning film
E. Determining the expose
F. Using the sensitivity guide or gray scale
G. Processing the film
1. Time and temperture
2. Inspection
3. Sensitivity guide
4. Machine processing
H. Treating problem copy
1. Weak lines
2. Fine lines
3. Off-white backgrounds
4. Dropping or holding colors
5. Grayed blacks or poor contrast
6. Yellowish paper or original
I. Line exposure calibration
1. F/stop
2. Exposure time
J. Diffusion transfer materials
1. Exposure
2. Processing
3. Applications

| LESSON PLAN NO. | DATE SCHEDULED | DATE PRESENTED | DATED TESTED |
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XI. CONTACT

A. Determining exposures
B. Positioning film and cleanliness
C. Processing the film
    1. Time and temperture
    2. Inspection
    3. Sensitivity guide or gray scale
    4. Machine processing
D. Applications
    1. Photograms
    2. Same-size negatives from original copy
    3. Reverses
    4. Tints
    5. Positives from negatives
    6. Duplicate negatives
    7. Posterizations
    8. Line negatives
    9. Spreading and choking
    10. Halftones

XII. HALFTONE PHOTOGRAPHY

A. Copy and gray scale
    1. Continous tone originals
        a. Black and white photographs
        b. Water color paintings
        c. Charcoal sketches
        d. Pencil Sketches
    2. 12 or 21 step gray scales
    3. Previously printed halftones
B. Density measurement and specifications
    1. Reflection density guide
    2. Densitometer
        a. Reflection
        b. Transmission
    3. Making and interpreting readings

| LESSON PLAN NO. | DATE SCHEDULED | DATE PRESENTED | DATED TESTED |
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XI. CONTACT (Continued)

C. Halftone screens
- 1. Theory related to characteristics
- 2. Care and handling
- 3. Types
  - a. Glass
  - b. Contact
    - 1. Magenta
      - a. Negative
      - b. Positive
    - 2. Gray
  - c. PMT
- 4. Dot shape
  - a. Conventional dot (square)
  - b. Elliptical dot
  - c. Double dot
- 5. Screen Ruling

D. Exposure computer calibration

E. Exposure calculations
- 1. Main (detail)
- 2. Flash
- 3. Highlight bump

F. Processing
- 1. Tray method
  - a. Time and temperature
  - b. Inspection
- 2. Automatic processor
- 3. Stabilization method
- 4. Diffusion transfer

G. Tone reprodution
- 1. Varying density range
- 2. Identifying 50% dot
- 3. Affects caused by differnet aperture settings

| LESSON PLAN NO. | DATE SCHEDULED | DATE PRESENTED | DATED TESTED |
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## XIII. SPECIAL EFFECTS

A. Duotones
- 1. Selecting the photograph
  - a. Good contrast
  - b. Good detail
- 2. Selecting colors
  - a. Aesthetic factors
  - b. Psychological factors
  - c. Customer requirements
    - 1. Product colors
    - 2. Colors used elsewhere in job
- 3. Selecting proper halftone dot angles
  - a. Angle copy
  - b. Angle screen
  - c. Preangled screens
- 4. Fake duotones
- 5. Moire pattern

B. Outline halftones
- 1. Selection of method
  - a. Opaquing
  - b. Mechanical mask
  - c. Photographic mask
- 2. Uses of outline halftones

C. Posterizations

## XIV. PROCESS COLOR PHOTOGRAPHY

A. Basic theories
- 1. Light
- 2. Primary colors
- 3. Process inks

B. Methods of color separation
- 1. Direct
  - a. Process camera
  - b. Contact frame
  - c. Enlarger

| LESSON PLAN NO. | DATE SCHEDULED | DATE PRESENTED | DATED TESTED |
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XIV. PROCESS COLOR PHOTOGRAPHY (Continued)

2. Indirect
   a. In-camera
   b. Process camera
   c. Contact frame
   d. Enlarger
3. Electronic color scanners

XV. QUALITY CONTROL DEVICES

A. Densitometers
B. Exposure computers
C. Sensitivity guides
D. Register marks
E. Gray scale
F. Transparent copy guide
G. Reflection copy guide
H. Color control strips

XVI. PROOFING METHODS

A. Prepress
   1. Diazo-blueprint
   2. Electrostatic
   3. Brownline
   4. Transparent color overlays
   5. Transfer color pigments
B. Press
   1. Proof presses
   2. Production presses

XVII. STRIPPING

A. Purpose
B. Equipment and Supplies
   1. Safety
C. Laying Out the Flat
   1. Plate Bend
   2. Gripper Bite
   3. Reference Marks

| LESSON PLAN NO. | DATE SCHEDULED | DATE PRESENTED | DATED TESTED |
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## XIV. PROCESS COLOR PHOTOGRAPHY (Continued)

D. Negative Preparation
   1. Trimming
   2. Opaquing

E. Assembly of Negatives
   1. Line
   2. Inserting Halftones

F. Imposition
   1. Step and Repeat
   2. Signature
   3. Work & Turn
   4. Work & Tumble

G. Multiple Color Flats
   1. Registering Devices

H. Multiple Exposure Flats

I. Positive Stripping

J. Final check against layout

K. Handling and Storage of Flats

## XVIII. PLATE MAKING

A. Plate Characteristics
   1. Surface
   2. Grain

B. Care of Plates
   1. Handling
   2. Storage

C. Types of Platemakers

D. Types of Plates
   1. Direct Image
   2. Photo Direct
   3. Electrostatic
   4. Pre-sensitized Surface
   5. Wipe-on
   6. Positive Working
   7. Negative Working
   8. Additive
   9. Subtractive
   10. Deep Etch
   11. Multi-Metal
   12. Other

| LESSON PLAN NO. | DATE SCHEDULED | DATE PRESENTED | DATED TESTED |
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XVIII. PLATE MAKING (Continued)

E. Exposure Control
F. Processing
    1. Desensitizing
    2. Developing and Lacquering
    3. Preserving Plates
    4. Proper Storage of Plates

XIX. OFFSET DUPLICATORS

A. Review of Offset Process
B. Safety
C. Operating Controls
    1. Power
    2. Ink and Moisture
    3. Feeder
    4. Delivery
    5. Air Controls
    6. Speed Controls
D. Feeding
    1. Pile Height
    2. Air Blowers and Vacuum
    3. Sheet Separators
    4. Sheet Forwarding Wheels
    5. Double Sheet Eliminator
    6. Register table
    7. Head Stops
    8. Side Guides
E. Dampening
    1. Function
    2. Types
        a. Conventional
        b. Aquamatic
    3. Function and Names of Rollers
    4. Dampening System Adjustment
    5. Fountain Solution
    6. ph Factor
    7. Setting Rollers
    8. Dampening Covers
        a. Molleton

XIX. OFFSET DUPLICATORS (Continued)

- b. Paper
- c. Disposable
- d. Other

9. Care and Cleaning

F. Inking Unit

1. Funtion
2. Types of Systems
   - a. Conventional
   - b. Aquamatic
3. Ink Rollers
   - a. Names
   - b. Function
4. Setting Rollers
5. Ink Fountain
   - a. Filling
   - b. Setting
   - c. Adjusting
6. Roller Glaze

G. Printing Unit

1. Plate Cylinder
   - a. Pressure Setting
   - b. Types of Plate Clamps
   - c. Lead Clamp Adjustment
   - d. Care and Cleaning
2. Blanker Cylinder
   - a. Types of Blankets
     1. Compressible
     2. Conventional
     3. Two (2) piece
   - b. Pressure Settings
   - c. Image Adjustment
   - d. Changing Blanket
   - e. Care and Cleaning
     1. Blanket
     2. Cylinder
3. Impression Cylinder
   - a. Care and Cleaning
   - b. Grippers

| LESSON PLAN NO. | DATE SCHEDULED | DATE PRESENTED | DATED TESTED |
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XIX. OFFSET DUPLICATORS (Continued)

H. Delivery System
- 1. Types
  - a. Chain
  - b. Chute
- 2. Side Joggers
- 3. Back Jogger
- 4. Delivery Grippers
- 5. Skeleton Wheels
- 6. Delivery Table

I. Trouble Shooting
- 1. Scumming
- 2. Tinting
- 3. Filling Up
- 4. Piling
- 5. Set-off
- 6. Vanishing
- 7. Sticking
- 8. Picking
- 9. Roller Stripping
- 10. Spraying
- 11. Mottling
- 12. Gray Type
- 13. Chalking
- 14. Running
- 15. Hickies
- 16. Image Breakdown
- 17. Streaking
- 18. Out of Register
- 19. No Image
- 20. Deletions From Plate

J. Care and Cleaning
- 1. Lubrication
  - a. Sequence
  - b. Types
- 2. Housekeeping
- 3. Washup
  - a. Types
  - b. Procedure

| LESSON PLAN NO. | DATE SCHEDULED | DATE PRESENTED | DATED TESTED |
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XIX. OFFSET DUPLICATORS (Continued)

K. Solvents and Chemicals
1. Safety
2. Press Washes
a. OSHA Specifications
b. Types
c. Storage
d. Care in Handling
e. Proper Uses
3. Plate Cleaners and Conditioners
4. Gums
a. Process
b. 14° Baume'
5. Fountain Solutions
6. Deletion Fluids

XX. THE OFFSET PRESS

A. Safety

B. Operating Controls
1. Power
2. Ink
3. Dampening
4. Feeder
5. Delivery
6. Locations of Emergency Stops
7. Cylinder Impression

C. Feeder and Register Table
1. Pile Height
2. Air and Vacuum
3. Sheet Separators
4. Sheet Forwarding Wheels
5. Double Sheet Eliminator
6. Register table
7. Head Stops
8. Side Guides
9. Sheet Hold Downs

D. Dampening Unit
1. Function
2. Types
a. Conventional
b. Continuous Flow (Alcohol)

| LESSON PLAN NO. | DATE SCHEDULED | DATE PRESENTED | DATED TESTED |
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XX. THE OFFSET PRESS (Continued)

3. Rollers
    a. Names
    b. Functions
4. Adjustment
5. Fountain Solutions
6. Setting Rollers
7. Dampener Covers
    a. Molleton
    b. Paper
    c. Disposable
    d. Sleeves
    e. Other
8. Care and Cleaning

E. Inking Unit
1. Function
2. Rollers
    a. Names
    b. Function
    c. Care
3. Setting Rollers
4. Ink Fountain
    a. Filling
    b. Setting
    c. Adjusting
    d. Agitators

F. Printing Unit
1. Plate Cylinder
    a. Purpose
    b. Plate Clamps
    c. Cylinder Undercut
    d. Cylinder Bearers
    e. Cylinder Packing
    f. Cylinder Gap
    g. Vertical/Horizontal Adjustment
    h. Care and Cleaning
2. Blanket Cyclinder
    a. Pupose
    b. Cylinder Undercut

| LESSON PLAN NO. | DATE SCHEDULED | DATE PRESENTED | DATED TESTED |
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XX. THE OFFSET PRESS (Continued)

- c. Cylinder Bearers
- d. Cylinder Packing
- e. Cylinder Gap
- f. Blanket Installation
- g. Care and Cleaning
- h. Positioning Adjustment

3. Impression Cylinder
   - a. Grippers
   - b. Care and Cleaning

G. Delivery
1. Joggers
2. Grippers
3. Chain
4. Skeleton Wheels
5. Gripper Release Cam
6. Table

H. Trouble Shooting

I. Care and Cleaning
1. Lubrication
   - a. Sequence
   - b. Types
   - c. Automatic Oilers
2. General Housekeeping
3. Washup

J. Solvents and Chemicals

K. Multicolor Sheet Fed Presses

L. Web Fed Presses

XXI. PRINTING INKS

A. Composition of Inks
1. Vehicle
   - a. Purposes
   - b. Types
2. Pigments
   - a. Purpose

| LESSON PLAN NO. | DATE SCHEDULED | DATE PRESENTED | DATED TESTED |
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XXI. PRINTING INKS (Continued)

- b. Organic Pigments
- c. Inorganic Pigments
- d. Opaque Pigments
- e. Transparent Pigments

3. Driers
   - a. Purpose
   - b. Types
4. Ink Additives
   - a. Waxes
   - b. Greases and Lubricants
   - c. Reducers
   - d. Varnishes
5. Pantone Matching System (PMS)

B. Manufacture of Printing Inks

C. How Ink Dries
1. Oxidation
2. Evaporation
3. Absorption (Penetration)

D. Physical Properties of Ink
1. Viscosity
2. Tack
3. Length of Ink

E. Types of Inks
1. Heat Set
2. Quick Setting
High Gloss
4. News
5. Metallic
6. Web
7. Magnetic
8. Other Specialty Inks
Copyfitting

F. Ink Troubles
1. Greasing or Scumming
2. Tinting
3. Stripping
4. Piling or Caking
5. Drying
6. Set-off

| LESSON PLAN NO. | DATE SCHEDULED | DATE PRESENTED | DATED TESTED |
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XXI. PRINTING INKS (Continued)

7. Crystallization
8. Trapping
9. Wearing of Plates
10. Fill-in
11. Picking
12. Chalking

XXII. PRINTING PAPERS

A. Manufacture
   1. Types of Pulps
B. Characteristics
   1. Grain
   2. Felt Side
   3. Wire Side
C. Major Classifications
   1. Bond
   2. Book
   3. Cover
   4. Bristol Index/Tag
   5. Ledger
   6. Specialty Papers
D. Basic Sizes
E. Basic Weights
F. Equivalent Weights
G. Paper Finishes
H. Paper Related Printing Problems
   1. Lint
   2. Curl
   3. Dull Knife
   4. Other
I. Calculations
   1. Paper Label
   2. Ordering
   3. Figuring Stock

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XXII. PRINTING PAPERS (Continued)

4. Cutting Diagram

XXIII. FINISHING AND BINDING

A. Binding Equipment Safety
B. Handling Paper
C. Folders
    1. Types of Folders
        a. Suction
        b. Friction
        c. Stream Feed
D. Types of Binding
    1. Stitching
        a. Side Wire
        b. Saddle
    2. Perfect
    3. Case
    4. Sewn
E. Trimming
F. Mechanical Binding
    1. Plastic
    2. Wire Spiral
    3. Aluminum Fasteners
G. Padding
H. Other Finishing Procedures
    1. Perforating
    2. Die Cutting
    3. Drilling
    4. Round Cornering
    5. Punching
    6. Collating
        a. Hand
        b. Machine
    7. Packaging
        a. Hand
        b. Machine
    8. Other

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XXIV. JOB PLANNING

- A. Customer Requirements
- B. Customer Relations
- C. Estimating & Purchasing
  - 1. Copyfitting
  - 2. Materials
  - 3. Labor
  - 4. Time/Materials
  - 5. Fixed Costs
  - 6. Overhead
  - 7. Profit
- D. Scheduling
- E. The Job Ticket

XXV. EMPLOYEE-EMPLOYER RELATIONS

- A. Filing an Application
- B. Interviews
- C. Attitude
- D. Work Habits
- E. Working For/With Others
- F. Responsibility
- G. Graphic Communications Labor Unions & Associations

XXVI. LEGAL CONSIDERATIONS

- A. Copyright Laws
- B. Counterfeiting
- C. Illegal & Offensive Material

| TITLE | LEV. | USABILITY | AUTHOR | PUBLISHER | CPYRT. |
|---|---|---|---|---|---|
| Photo Offset Fundamentals Study Guide | 12.5 | OK* = Good | John E. Cogli | McKnight Publishing Co. | 1973 |
| COMMENTS: Paperback; 2 colors, fair visuals, questions vocabulary development. | | | | | |
| Photo Technology | 10.0 | OK* = Good | LaCour & Lathrop | American Technical Society | 1972 |
| COMMENTS: Good visual, 3 colors, good headings, vocabulary development, introduction, projects but no questions. | | | | | |
| Platemaker's Guide | 14.0 | OK* = Good | No Author | Print Products Division, 3M Company | 1970 |
| COMMENTS: Paperback, colors, glossary, good visuals, print good, good vocabulary development. | | | | | |
| Practical Problems in Mathematics for Printers | 11.6 | OK* = Good | James P. DeLuca | Delmar Publishing Co. | 1976 |
| COMMENTS: 2 colors, good visuals and examples. Vocabulary well developed, good explanations. | | | | | |
| Printing Estimating | 10.8 | OK* = Good | Gerald A. Silver | American Technical Society | 1970 |
| COMMENTS: Black & white, good headings, good print, introduc tion, questions and vocabulary. | | | | | |
| Printing Layout & Design | 9.6 | Poor | Delmar | Delmar Publishing Co. | 1968 |
| COMMENTS: Paperback, 2 colors, but colors in one section, headings light, no questions, no vocabulary, not recommended. | | | | | |
| Graphic Arts Procedures - Basic | 10.5 | OK* = Good | Karch R. Randolph | American Technical Society (Chicago) | 1965 |
| COMMENTS: Subheadings, 2 colors, some visuals, no questions, some vocabulary development, glossary. | | | | | |
| Graphic Arts Procedures - The Offset Processes | 8.9 | OK* = Good | Karch & Buber | American Technical Society (Chicago) | 1967 |
| COMMENTS: 3 colors, visuals, good headings, fine print, vocabulary and questions. | | | | | |
| Graphic Communications | 11.0 | OK+ = Excellent | Richard J. Brolkhuizer | McKnight Career Publications | 1973 |
| COMMENTS: 3 colors, visuals, good headings, fine print vocabulary and questions | | | | | |
| Lithographer | 9.3 | OK- = Fair | no author | U.S. Gov't. Printing Office | 1963 |
| COMMENTS: 2 colors, print ok, visuals outdated, no introduction or summary. | | | | | |
| Lithographer 3 & 2 | 10.2 | OK- = Fair | no authur | U.S. Gov't | 1963 |
| COMMENTS: Black & white, visuals, headings, good introduction, vocabulary development, no questions, snall print, has glossary | | | | | |
| Modern Graphic Arts Paste Up | 10.9 | OK* = Good | Gerald A. Silver | American Technical Society | 1973 |
| COMMENTS: Paperback, 2 colors, vacabulary developments, no questions, good headings, visuals. | | | | | |
| Photo Offset Fundamentals | 12.6 | OK* = Excellent | John E. Cogoli | McKnight Publishing Co. | 1973 |
| COMMENTS: Multicolor, good visuals, good print, vocabulary included, questions included, introduction. | | | | | |

Grade ..... Year ..... Instructor .....

| TOOL CHECK NO. | LOCKER NO. | TEXT BOOK NO. | SHOP GRADES MARKING PERIOD | | | | | | THEORY GRADES MARKING PERIOD | | | | | |
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## GENERAL GRAPHIC COMMUNICATIONS OBJECTIVES

The Graphic Communications course of study in the Vocational-Technical Schools of Connecticut is designed to provide students with basic training in the field of graphic communications.

On Successful completion of this course the student will be able to take a SAFE and workmanlike approach in solving theoretical and actual on-the-job problems. The student will know where to locate pertinent information, both technical and practical, to accomplish all assignments in the most practical and proper manner.

As a result of experience gained through the broad objectives listed below, the student will:

1. be able to recognize the major printing processes and their respective products and know the relative merits of each process;
2. be able to perform in the areas of copy preparation, reproduction photography. stripping, platemaking, presswork and finishing with a level of proficiency suitable for job entry as an advanced learner;
3. have the related technical knowledge needed to supplement skills in the areas itemized above in order to make rational decisions;
4. have a realistic concept of his abilities and limitations in the various areas comprising the graphic communications;
5. have the personal traits of promptness, willingness to work, and the ability to accept supervision;
6. be able to follow written and oral directions;
7. be aware of the interrelationships among production departments and the contributions each area makes to the other.
8. respect the potential for personal injury of production equipment and use appropriate safety precautions when working around such equipment;
9. have an accurate concept of the most common occupations in graphic communications and the traits and preparation required of employees desiring to succeed in those occupations;
10. understand the relationship between continuous training and success in an occupation.

OBJECTIVES - GRADE 10

Upon successful completion of the tenth grade, the student should be able to:

1. Work around printing equipment using safe work habits.
2. Prepare a mechanical for a simple one color printing job.
3. Proofread using the proper proof marks.
4. Scale camera copy for reduction/enlargement.
5. Prepare the darkroom and process camera for operation.
6. Produce acceptable line negatives and contact prints.
7. Lay out and strip a flat for an offset duplicator.
8. Expose and process presensitized offset plates.
9. Prepare an offset duplicator for operation.
10. Run a single color job on an offset press.
11. Handle printing papers properly.
12. Calculate the number of stock sheets required for a given job.
13. Set up and operate a power cutter safely.
14. Perform simple bindery operations.
15. Communicate in trade situations using trade terminology.

OBJECTIVES - GRADE 11

Upon successful completion of grade 11, the student should be able to:

1. Work around printing machinery using safe work habits.
2. Mark up copy specifications for phototypesetting.
3. Perform basic phototypesetting operations.
4. Prepare, maintain and operate film/paper processors.
5. Prepare a camera ready mechanical with masks, overlays.
6. Calculate exposure times for copy of varying qualities.
7. Expose and process negatives using time/temperature method.
8. Calcualte exposure times for making halftone negatives.
9. Photograph camera ready copy using photo mechanical process.
10. Prepare impositions and strip flats for multiple page and multicolor forms.
11. Prepare step-and-repeat and other multi-burn flats.
12. Expose and process offset plates requiring multiple exposures.
13. Identify the various kinds of printing papers.
14. Calculate the amount of paperrequired to print a given job.
15. Print multi-color jobs and jobs requiring close register on an offset duplicator.
16. Perform basic operations required to print single color work on an offset press.
17. Set up and operate air feed folder for single fold.
18. Follow job specifications as written on job ticket.

OBJECTIVES - GRADE 12

On successful completion of grade 12, the student should be able to:

1. Write formats and use proper codes for setting type on the phototypesetter.
2. Mark up a printing job for type styles and sizes.
3. Change film fonts/discs on phototypesetter.
4. Perform more difficult camera operations.
5. Perform more complex phototypesetting operations.
6. Prepare impositions and strip flats for complex forms.
7. Perform those operations on an offset press which are required to hold register, ink and water balance, and proper ink coverage.
8. Set up and operate various bindery machines.
9. Fill out a job ticket accurately.
10. Cost out a printing job using proper estimating procedures.
11. Perform in a trade enviornment, recognizing the importance of SAFETY, proper work habits, good character and proper attitude when entering the work force.
12. Seek employment in the Graphic Communications industry.

## RECORDING STUDENT PROGRESS

A major principle of vocational education is that the students learn skills or the performance of operations of a trade with the production job as a vehicle to accomplish this objective.

The operations are defined on the shop progress record and it is imperative that the instructor have some means of recording the student experiences and achievement.

The approved method of recording student progress is as follows:

**Instructed -** This designation on the progress record indicates that the student has performed a skill with the assistance of and under the supervision of the instructor.

**Practiced -** This designation on the progress records indicates that the student has performed a skill either by himself or with little help from the instructor.

**Proficient -** This designation on the progress record indicates that the student is capable of performing a skill by himself within a reasonable amount of time with no assistance from the instructor. In effect this implies that the student has been tested for the skill.

This method of noting student progress will define accurately student achievement and in fact will point out any weaknesses the student may have in certain operations; thus highlighting areas where the student may need help.

Grades should be kept on student daily progress cards or in roll books.

## PASTE MAKEUP

| Draw lines accurately | Square up a board | Draw center lines | Draw paper marks | Draw image lines | Wax type/art | Trim type/art | Lay out work to be pasted | Position type | Position artwork | Center type/art | Paste up using wax | Paste up using rubber cement | Line up work horizontally | Line up work vertically |
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PASTE MAKEUP

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|---|
| Prepare simple mechanical |
| Burnish type |
| Clean mechanical |
| Prepare combination mechanical |
| Scale copy for enlargement/ reduction |
| Prepare ruled form |
| Paste up using preprinted tints |
| Paste up using Prestype |
| Paste up using Rubylith |
| Paste up using overlays |
| Paste up using rule tapes |
| Paste windows |
| Draw round corners |
| Paste up simple advertisement |
| Paste up form w/bleeds |

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## COLD TYPE COMPOSITION (Non Photo)

| Prepare machine for operation | Change type fonts | Set letterspacing | Set word space | Increase/decrease line spacing | Set line length | Change ribbon | Set flush left lines | Set flush right lines | Set centered lines | Set justified type | Set tabular matter | Set runarounds | Set type with rules | Store fonts |
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## PHOTOCOMPOSITION (Display)

| Set up machine for operation | Prepare Chemicals | Set a simple line | Letterspace words | Condense words | Develop line | Clean machine | Change film/paper | Advance film/paper | Change disc/film strip | | | | | |
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| Prepare typesetter for operation | Initialize typesetter | Insert/initialize disc | Set type flush left | Set type flush right | Set type centered | Store job on disc/tape | Call job to screen | Edit copy on screen | Replace copy on screen | Delete copy on screen | Change font/width card | Remove/replace cassette | Change paper/film | Load photographic material |
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| Insert space | Set justified type | Set type w/fixed spaces | Increase/decrease letterspacing | Increase/decrease line spacing | Insert character | Insert leader | Insert baseline rule | Flash only | Space only | Increase/decrease density | Set tab parameters | Clean & maintain phototypesetter | Store discs/tapes | |
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| Prepare chemicals | Develop film/paper | Replenish chemistry | Clean & maintain processor | | | | | | Set for thickness | Set length of stitch | Set for side wire stitch | Set for saddle stitch | Change spool | |
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## DARKROOM PROCEDURES

| Set up darkroom | Mix chemicals | Handle film properly | Cut film | Develop & fix film | Read sensitivity guide | Wash negative/positive | Dry film | Evaluate negatives | Chemical etch | Store film | Keep darkroom clean | | | |
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## PROCESS CAMERA

| Set aperature | Set timer | Adjust camera lights | Clean copy holder | Load copy holder | Clean lens | Position image using ground glass | Focus using ground glass | Focus using tapes | Set vacuum board | Place film on vacuum board | Expose film | Replace camera lights | | |
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LINE PHOTOGRAPHY

POWER CUTTER

| Place sensitivity guide | Expose same size copy | Expose reduction | Expose enlargement | Expose copy of different quality | Proportion scaling | Expose copy using filters | | | Jog paper | Set back guage | Operate cutter | Split backgage | Replace cutting stick | Lubricate cutter |
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## CONTACTING

| Make contact w/pt. light source | Make contact w/process camera | Duplicating film | Make paper print | Make film positive | Make spreads/chokes | Make reverse print | Make contact w/enlarger | Make PMT positive | Make PMT reverse | Make PMT transparency | Make PMT halftone | Clean & maintain PMT processor | | |
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| Photograph contact screen | Photograph halftone computer | Make main exposure | Make flash exposure | Make bump exposure | Make test negative | Evaluate negative | Find screen range | Make corrected halftone negative | Make duotone negatives | Make dropout halftone negative | Make negative from halftone print | Rescreen printed halftone | Process halftone by time/temp. | |
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| Operate hand camera | Determine proper settings | Change lenses | Load/unload camera | Load exposed film on reel | Mix chemistry | Develop roll film | Make contact print | Set up enlarger | Make test strip | Make an enlargement | Tray process print | Machine process print | Handle print | Dodge/burn in |
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| | | | | | | Rule for accuracy | Layout a simple flat | Trim negatives | Align/position negatives | Tape down negatives | Check flat against layout | Cut windows | Opaque negatives | Strip for double burn |
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| Strip for step & repeat |
| Scribe rules in negative |
| Strip using pins/tabs |
| Plan an imposition |
| Make imposition dummy |
| Strip a gang flat |
| Strip multiple page flats |
| Strip trim/fold marks |
| Make color masks |
| Strip silhouettes |
| Strip in corrections |
| Strip register marks |
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| Operate platemaker |
| Burn plate for simple exposure |
| Burn plate w/multiple images |
| Burn step & repeat plate |
| Burn plate for register |
| Process additive plate |
| Process subtractive plate |
| Process transfer plate |
| Process direct image plate |
| Process electrostatic plate |
| Desensitize a plate |
| Preserve a plate |
| Store a plate |
| Replace light source |
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## PAPER FOLDER

| Lubricate folder | Set feeder | Load stock to dummy | Set air blast | Set vacuum | Set friction wheels | Set vacuum | Set transfer tapes | Adjust transfer table | Set fold plates/single fold | Set fold plates/multiple parallel folds | Set for right angle folds | Set for tandem folding | Set roller pressures | Set for perf/score/slit |
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| Set delivery | | | | Lubricate duplicator | Handle paper | Set feeder | Set feed rollers | Set caliper | Set transfer tapes | Set side guide | Set head stop | Set air blast | Set vacuum | Set suckers |
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|---|---|
| | Install plate |
| | Raise/lower image |
| | Mix fountain solution |
| | Set dampeners |
| | Set ink rollers |
| | Adjust ink fountain |
| | Adjust dampener dwell |
| | Get proper position |
| | Set delivery/chute |
| | Set delivery/chain |
| | Set spider wheels |
| | Adjust plate to blanket pressure |
| | Adjust impression cylinder pressure |
| | Clean blanket |
| | Clean impression cylinder |

| Clean dampener covers | Change dampener covers | Wash duplicator | Check for register | Deglaze rollers | | | | | | | | | | |
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OFFSET PRESS

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|---|---|
| | Lubricate press |
| | Set up feeder |
| | Load paper stock |
| | Set register table |
| | Set guides near/far |
| | Change side guide |
| | Set double sheet trip |
| | Read micrometer |
| | Pack plate |
| | Install plate |
| | Pack blanket |
| | Install blanket |
| | Set dampener fountain |
| | Read hydrometer |
| | Mix fountain solution |

| Set dampener rollers | Recover dampener rollers | Remove/replace dampener rollers | Test for ph | Set ink fountain | Adjust ink fountain | Set ink rollers | Remove/replace ink rollers | Deglaze rollers | Set delivery | Set cylinder pressures | Raise/lower image | Adjust cylinder lay | Automatic washup | Register for color |
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| Apply ink additives | Set anti-offset spray | | | | | | | | | | | | | |
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## OTHER BINDERY EQUIPMENT

| Set/operate paper drill | Set paper drill for round corners | Sharpen hollow drill | Set/operate plastic binder | Make pads w/padding compound | Operate electric numbering machine | Wrap packages | Hand fold | Count stock | Handle paper cartons | | | | | |
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